## REMARKS

Claims 1, 3, 5-19, 28, 29, 31, 32, and 35-52 are in the application, of which claims 1, 9, 11, 16, 28, and 35 are in independent form. Claims 28, 29, 31, and 32 are amended herein.

All of the pending claims stand rejected in the Office Action mailed December 19, 2008 (the "Office Action") as purportedly being anticipated by U.S. Patent Pub. No. 2001/0033220 to Stone et al. ("Stone").

In view of the amendments and remarks herein, the Applicants respectfully request reconsideration of the pending claims.

### EXAMINER INTERVIEW

The Applicants thank Examiner Moorthy for the telephone interview extended to the Applicants' representatives on January 27, 2009. In the interview, several distinctions between the claims and Stone were discussed.

### REJECTION OF CLAIMS 1, 3, 5-19, 28, 29, 31, 32, AND 35-52 UNDER 35 U.S.C. § 102

Claims 1, 3, 5-19, 28, 29, 31, 32, and 35-52 ("the claims") stand rejected in the Office Action under § 102 as purportedly being anticipated by Stone.

A claim is anticipated under 35 U.S.C. § 102 only if "each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." MPEP §2131, *citing* Verdegaal Bros. v. Union Oil Co. of California, 814 F.2d 628 at 631 (Fed. Cir. 1987); emphasis added. "The identical invention must be shown in as complete detail as is contained in the . . . claim." MPEP §2131, citing Richardson v. Suzuki Motor Co., 868 F.2d 1226 at 1236 (Fed. Cir. 1989); emphasis added.

The Applicants respectfully traverse the rejection of the claims since Stone fails to disclose each and every feature recited therein. Specifically, Stone fails to disclose at least authenticating the identity of a user using unique, internal traits of the user. The claims recite authentication using unique traits derived from a heartbeat waveform ("…analyzing said waveform to identify unique traits…"), and a

"second unique, internal physiological trait…" Claim 1; emphasis added; *also see* claims 9, 11, 16, 28, and 35. Stone fails to disclose unique, internal traits as recited in the claims; therefore, Stone fails to anticipate the claims.

*THE OXYGEN SATURATION INFORMATION DISCUSSED IN STONE IS NOT A UNIQUE TRAIT*

Stone discusses an authentication system that is principally driven by a fingerprint pattern. The Stone Abstract explains that fingerprint information is used to verify the individual's identity, with blood oxygen and ECG information used to "verify" the fingerprint (verify that the fingerprint was provided by a "live" human):

> "[a] system and method for verifying an individual's identity that collects fingerprint information and **verifies it** using blood oxygen saturation and/or ECG information." Emphasis added.

Clearly, a fingerprint pattern cannot be construed as internal physiological trait or a trait obtained by analyzing a "heartbeat waveform" as recited in the claims. Moreover, Stone is clear that fingerprint information is used to identify the user, and that the blood oxygen saturation level and/or ECG information is used to verify the fingerprint (…collects fingerprint information and verifies it using blood oxygen saturation and/or ECG information"). Therefore, Stone does not disclose the blood oxygen saturation and/or ECG information as unique traits in and of themselves. Id. This aspect of Stone is further discussed in paragraph [0019], where Stone explains the purpose of the blood oxygen saturation information:

> "To ensure that the fingerprint information acquired by the first module has not been extracted from a severed finger (or other appendage) or a fingerprint that has been lifted or recreated in latex (*i.e.,* obtained from a live being), a second module having blood oxygen verifier is provided…" Emphasis added.

Here Stone clearly explains that the blood oxygen saturation information is used only to verify that the fingerprint information was obtained from a "live person," not is not used as a "unique, internal physiological trait" as recited in the claims. *See* claim 1; emphasis added.

Moreover, Stone states that the saturation information used to verify the fingerprint falls within a very broad range and, as such, could not be used to uniquely identify a user:

> "…the blood saturation information provides reliable information indicative of whether the fingerprint was extracted from a live being…the oxygen saturation of a 'live' being is typically greater than 95%...
>
> "Accordingly, if the extracted fingerprint information matches information in the memory and a blood oxygen saturation reading greater than 85% is obtained, the processor of the invention would [authenticate the individual]…
>
> "If an oxygen saturation reading less than 81% (*i.e.,* threshold reference) is obtained from the second security module, it is highly probable that the fingerprint information was obtained form a latex fingerprint or a fingerprint obtained from a severed finger…" Stone Paras. [0021]-[0023]; emphasis added.

Clearly, Stone's use of blood oxygen information is within a broad range indicative of whether a finger is "live" or not. Therefore, Stone's use of blood oxygen information cannot disclose a unique, internal trait as recited in the claims.

*STONE DOES NOT DISCLOSE THE USE OF ECG INFORMATION AS A UNIQUE TRAIT*

Stone's description of ECG information is similar to that of blood oxygen saturation. Stone states that the ECG may provide an "additional layer of security" and describes extracting "distinguishable characteristics" therefrom. *See* Stone Paras. [0025]-[0026]. However, Stone does not disclose that the characteristics are unique or even "substantially unique" to a particular individual, merely that they may be "distinguishable." Id. Distinguishable between what, Stone does not say. However, considering Stone's disclosure as a whole, Stone's principal discussion of ECG information is to distinguish whether a fingerprint was obtained from a "live" person (*e.g.,* to verify the fingerprint). *See* Stone Abstract. Applicants note that it is well-settled law that a reference must be considered in its entirety, including portions that would lead away from the claims. *See* W.L.Gore & Associates, Inc. v. Garlock, Inc., 721 F.2d 1540 at 1550 (Fed. Cir. 1983); *also see* MPEP § 2141.02(VI). In this

case, given Stone's reliance on fingerprint information and discussion of using blood oxygen and/or ECG information only to distinguish between a fingerprint provided by a "live" human and a spoof attempt (*e.g.,* amputated finger, latex, etc.), Stone clearly leads to the conclusion that the ECG information is used only to verify fingerprint information, and not as a unique trait of a user.

Moreover, although Stone discusses various identifiable "waveforms" of a cardiac cycle, Stone fails to disclose whether the waveforms would be uniquely identifying of a particular individual (*e.g.,* unique), and fails to disclose using such waveforms as a unique identifier. In fact, Stone discusses using the ECG information in a role similar to that of the blood oxygen information, as a fingerprint verifier. For instance, Stone discusses using the ECG information to correlate with information read by a pulse oximetry signal (presumably to make sure the two signals correlate to prevent spoofing a "live" human). *See* Stone Para. [0027]. Therefore, Stone clearly shows the use of the ECG information in the role of supplemental verifier of the fingerprint (*e.g.,* that the fingerprint was obtained from a "live" person) as opposed to an independent, unique trait of the user as recited in the claims.

*STONE DOES NOT DISCLOSE TWO UNIQUE TRAITS AS RECITED IN THE CLAIMS*

None of the measurements discussed in Stone can be construed as a "unique, internal … trait" as recited in the claims. Therefore, Stone cannot anticipate the claims, which recite "…reading a first unique, heartbeat waveform…; analyzing said waveform to identify unique traits; reading a second unique, internal physiological trait…" Claim 1; emphasis added; *also see* claims 9, 11, 16, 28, and 35.

As discussed above, Stone discusses authenticating a user's identity primarily based upon the user's fingerprint. A fingerprint cannot be construed as an "internal physiological trait" as recited in the claims.

Stone further discusses the use of blood oxygen and/or ECG information are used to verify the fingerprint (*e.g.,* verify that the fingerprint was obtained from a "live" person). *See* Stone Abstract. In Stone, neither the blood oxygen level nor ECG information is disclosed and/or used as a "unique trait" as recited in the claims. The

blood oxygen levels discussed in Stone are measured within broad ranges that are not unique to a particular individual, but rather are used merely to distinguish between a live finger and a severed finger or latex facsimile. Accordingly, the Stone blood oxygen information cannot be construed as a "unique trait" and/or "unique, internal physiological trait" as recited in the claims.

Like the blood oxygen information, Stone only discusses using the ECG information to verify that a fingerprint was obtained from a "live" person (correlation with a pulse obtained in via a oximetry signal). *See* Stone Para. [0027]. Moreover, although Stone does discuss "distinguishable characteristics relating to the electric current (or potential) generated by the heart," Stone does not disclose that these so-called "distinguishable characteristics" are used to authenticate the identity of an individual beyond "live person verification." Id. Therefore, the Stone ECG information cannot be construed as a "unique trait" as recited in the claims.

Therefore, Stone cannot be construed as disclosing at least one of the features in the claims: specifically the use of a first and second unique, internal traits to authenticate an individual: the first traits based on a first unique, heartbeat waveform…" and a "second unique, internal physiological trait… Claim 1; *also see* claims 9, 11, 16, 28, and 35.

Furthermore, even if the Stone ECG information could be construed as a "unique, internal trait" as recited in the claims, the Applicants point out that the claims require layering of two traits. For example, claim 1 recites:

> "reading a first unique, heartbeat waveform of an individual;
> analyzing the waveform to identify unique traits;
> reading a **second unique, internal physiological trait** of the individual…"
> Emphasis added;

Claims 9, 11, 16, 28, and 35 recite similar features.

Neither the Stone fingerprint nor the blood oxygen information can be construed as "unique, internal physiological traits" as recited in the claims. Therefore, even if the Stone ECG information could be construed as a "unique, internal physiological trait," Stone still fails to disclose layering two such traits; neither

the fingerprint nor the blood oxygen information can possibly be construed as a unique, internal physiological trait as recited in the claims.

Since Stone fails to disclose each and every element of the claims, specifically, at least a "unique trait" from a "first unique, heartbeat waveform" **and** a "second unique, internal physiological trait," the Applicants respectfully traverse the rejection of the claims.

*STONE DOES NOT DISCLOSE ANALYZING A HEARTBEAT WAVEFORM TO IDENTIFY UNIQUE TRAITS*

As discussed above, Stone discusses authenticating a user's identity primarily based upon the user's fingerprint. As used in Stone, the blood oxygen and/or ECG information appear to be used merely to verify that a fingerprint comes from a "live" person. For example, the blood oxygen level is required only to fall within a broad range indicative of a "live" human. *See* Stone Para. [0022]. Similarly, although Stone does discuss various heartbeat waveform types, the only particular application of the ECG information discussed in Stone is to use the information to verify (correlate) pulse oximetry signals (used to verify a "live" finger). *See* Stone Para. [0027].

Therefore, although Stone may discuss the possibility of measuring a heartbeat waveform, this in no way discloses the features recited in the claims. The claims do not recite merely reading a heartbeat waveform via an ECG. Rather, the claims recite a particular application of a heartbeat waveform. Specifically, claim 1 recites:

> "reading a first unique, heartbeat waveform of an individual;
> analyzing the waveform to identify unique traits…" Emphasis added.

Claims 9, 11, 16, 28, and 35 recite similar features.

Stone does not disclose analyzing a heartbeat waveform to identify unique traits. As discussed above, Stone does not disclose using the heartbeat waveform in any manner other than to verify that a "live" person has provided a fingerprint (*e.g.,* correlation between a pulse read via a blood oxygen sensor and the ECG information). *See* Stone Para. [0027].

Moreover, although Stone may discuss reading and/or obtaining a heartbeat waveform, this is not what is claimed ("the ECG verifier extracts distinguishable characteristics relating to the electric current (or potential) generated by the heart. Such information includes the three readily identifiable waveforms of a cardiac cycle…") Stone Para. [0026]. In fact, Stone paragraph [0026] highlights an important distinction between it and the claims. Stone states that the "characteristic" is the waveform itself ("such information includes … waveforms of a cardiac cycle…"). Id. In contrast, the claims recite the further feature of not only reading a waveform, but also "analyzing the waveform to identify unique traits…" Claim 1 emphasis added; *also see* claims 9, 11, 16, 28, and 35. Therefore, Stone cannot be construed as disclosing each and every element of the claims.

Since Stone fails to disclose at least analyzing a waveform to identify unique traits as recited in the claims, the Applicants respectfully traverse this rejection.

**GENERAL CONSIDERATIONS**

By the remarks provided herein, the Applicants have addressed all outstanding issues presented in the Office Action. Applicants note that the remarks presented herein have been made merely to clarify the claimed invention from elements purported by the Office Action to be taught by the cited references. Such remarks should not be construed as acquiescence, on the Applicants' part, as to the purported teachings or prior art status of the cited references, nor as to the characterization of the cited references advanced in the Office Action. Accordingly, Applicants reserve the right to challenge the purported teachings and prior art status of the cited references at an appropriate time.

## CONCLUSION

For the reasons discussed above, the Applicants submit that the claims are in proper condition for allowance, and a Notice of Allowance is respectfully requested. If the Examiner notes any further matters that may be resolved by a telephone interview, the Examiner is encouraged to contact John Thompson by telephone at (801) 578-6994.

Respectfully submitted,

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